

ABSTRACTS



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1. Impact of Low Temperature on Subtropical Fruit Species in the Foothills of Uttarakhand

A. C. Rathore and H. Mehta*

ICAR-Indian Institute of Soil and Water Conservation, 218 Kaulagarh Road, Dehradun, 248 195 India

**Corresponding Author's E-mail : rathoreac@gmail.com*

ABSTRACT : The occurrence of subzero temperature during winter season (December to February) once in 4-5 years is a common phenomenon in the valley portion of foothills of Uttarakhand in Indian sub-Himalaya. The frequency of extreme climatic events, their magnitude and extend are increasingly common in recent years. Extremes of temperature, un-seasonal rains and high intensity storms have also increased the risk of damage in agriculture and farming practices. But the frequency of occurring subzero temperature is now changing and it is happening twice or thrice in a five years duration keeping in view of climate change. Among these months, January is considered as coldest one, so the study the effect of Mean January Temperature (MJT) on plant survival (<2 years of age) and foliage damage in fruit bearing orchards on 9 subtropical fruit species (mango, litchi, guava, papaya, aonla, mandarin, jackfruit, anar and lemon. The study was conducted during 1999 to 2010 on survival % and foliage damage in bearing orchard in common fruit plants in the region. Minimum survival in aonla (39%), jackfruit (45%), papaya (49%) and mango plants (50%) which were below 2 years whereas these plant were the worst affected crops with nearly 100% mortality in young (< 2 years old) plants during 2003 and 2008, while litchi, anar, mandarin and guava plants were relatively unaffected. Altitude and frost impact on plant survival was positively correlated ($r=0.98$). Orchards at higher elevations (>600 m a s l) were significantly less affected than orchards at 600 m asl. Maximum survival 95%, 82% and 65% were recorded at > 900, 600-800 and 600 m altitude, respectively among all the fruit species. Correlation between foliage damage in fruit bearing plant species and available soil moisture recorded was negative ($r= -0.93$), which indicated that high available soil moisture in the root zone have reduced the foliage damage in all fruit bearing orchard. Maximum foliage burning was observed in papaya (80%) and minimum with anar (10%).

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2. Studies on Variability of Jamun Genotypes in Central and Submontaneous Zone of Punjab

*Shamsher Singh and Amarjeet Kaur**

Department of Horticulture, Khalsa College, Amritsar, Punjab, India

**Corresponding Author's E-mail: dr.amarjitkaur30@gmail.com*

ABSTRACT : Jamun (*Syzygium cumini* Skeels.) is a versatile fruit tree of India. A survey was carried out in Amritsar, Gurdaspur and Pathankot Districts to identify the elite genotypes, in which 25 seedlings of jamun were evaluated for their vegetative and fruit qualities during 2015-2016 respectively. The study revealed that there was a wide variation among the genotypes. Data revealed that the maximum tree height (24.38m) and tree spread (17.67 m). was measured in GD-19 genotype. The maximum leaf length (22.0 cm) and leaf breadth (10.10 cm) was recorded in the genotypes GD-3 and GD-6. The genotype GD-13 recorded highest (78.28%) pulp per cent. Maximum seed weight(4.08 g) was in the genotype GQ-32 while Genotype GD-10 ranked first with regard to yield (182.40 kg/tree).

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3. Character Association and Relationship Among Brinjal (*Solanum melongena* L.) Genotypes using SSR Markers

Lila Bora^{1} and Rohit Bisht²*

¹Regional Research Station (CCSHAU, Hisar), Uchani, Karnal

²Department of Vegetable Science, CCSHAU Hisar, Haryana, India

*Corresponding Author's E-mail: lila.bora@gmail.com

ABSTRACT : An experiment was conducted during rainy season, 2012-13 in seventeen brinjal genotypes to study genetic variability, heritability and character association in brinjal. All traits under study varied significantly. Genotypic variances of all traits were lower than phenotypic variances. High genetic advance with high heritability was observed for days to fifty % flowering, fruit length, number of marketable fruits, total number of fruits per plant and yield per hectare indicates the possibility of improvement of these traits by following selection. Yield was correlated positively and significantly with most of the traits viz., fruit length, number and weight of fruits (marketable and unmarketable), yield per plant and associated negatively and significantly with fruit diameter. Path analysis revealed that marketable fruits weight affected yield highly. Dendrogram from SSR profiles revealed by UPGMA cluster analysis could readily separate 18 Brinjal genotypes into five different groups. Genotypes viz., PB-4 and PB-66; Male Unicorn and White Long Green ; PB-69 and PB-66; PB-69 and PB-4; PB-67 and PB-66; PB-67 and PB-4; KS-331 and PB-66; and KS-331 and PB-4 combinations were highly related as indicated by high value of similarity coefficient as compared to other genotypes. Species *Solanum ethiopicum* showed least similarity with all the *Solanum melongena* genotypes.

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4. Genetic Variability and Correlation Studies in Brinjal (*Solanum melongena* L.)

V. Chaitanya* and K. Ravinder Reddy

College of Horticulture, Rajendranagar, Hyderabad, 500 030 (A.P.)

*Corresponding Author's E-mail: chaitanya.hortico@gmail.com

ABSTRACT : In brinjal significant variability was available in the parents and hybrids. The present study which comprised of 7 parents, 21 hybrids and 2 commercial checks were evaluated in Randomized Complete Block Design replicated thrice at Vegetable Research Station, ARI, Dr.YSRHU, Hyderabad during 2014. Marketable fruit yield was kept as a dependent character and the results were analysed. Moderate estimates of phenotypic and genotypic co-efficient of variation was observed for fruit length, marketable yield per plant and fruit width both at genotypic and phenotypic level. The characters viz., marketable fruit yield per plant and fruit length recorded high magnitude of heritability coupled with genetic advance. Therefore, these traits should be kept in mind for better planning of improvement programme in brinjal. Correlation coefficients were estimated at both genotypic and phenotypic level. Total number of fruits per plant, number of marketable fruits per plant, average fruit weight, fruit length, total yield per plant, number of branches per plant and plant height were positively, fruit and shoot borer infestation on fruits was negatively and significantly correlated with marketable yield per plant at both genotypic and phenotypic level which indicates the importance of these characters during selection for high yielding genotypes in eggplant.

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5. Evaluation of Local Variety of Cape gooseberry from Hathras under the Environmental Conditions of Amritsar

Savreet Khehra*

Punjab Agricultural University, Farm Advisory Service Center, Tarn Taran-143 401

*Corresponding Author's Email: savreetkhehra@pau.edu

ABSTRACT : Cape gooseberry is a minor under exploited remunerative fruit crop. It has high significant for diversification with fresh production. Being short duration fruit crop, it can be used as cash crop and intercrop. Keeping these factors in view, the experiment was carried out at farmer's field at village Bhorshi Rajputan, district Amritsar during the year 2014-15 to evaluate plant development of local variety of Cape gooseberry from Hathras district under the environmental conditions of Amritsar district. The experiment was laid out in Randomized Block Design with twelve treatments replicated thrice. The observations regarding average epicalyx weight, fruit weight, fruit volume, fruit length, fruit diameter, TSS and acidity were noted at variable intervals starting from November 20 to February 10 to study fruit development and maturation. The crop took 104 days from fruit set to maturity.

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6. Study on Foliar Fertilization of Cucumber (*Cucumis sativus* L.)

Rakesh Mondal¹, Joydip Mandal^{2*}, Rambilas Mallick³ and Smaranika Mohanta²

¹Department of Horticulture, ³Department of Agronomy,

Institute of Agricultural Science, University of Calcutta, Kolkata – 700 019 (West Bengal), India

²Department of Crop Improvement Horticulture and Agricultural Botany,

Institute of Agriculture, Visva-Bharati (A Central University), Sriniketan - 731 236 (West Bengal), India

*Corresponding Author's E-mail: joydip_hort@rediffmail.com

ABSTRACT : Foliar fertilization is often effective and gainful supplement to soil application. The objective of the experiment was to study the effect of different foliar fertilizers with or without boron on cucumber productivity and other traits. N:P:K (20:20:20), Potassium Nitrate (KNO₃), Calcium Nitrate (CaNO₃), Diammonium Phosphate (DAP) or water (control) was sprayed with or without Boron (boric acid) on cucumber. Response of cucumber to different treatments has revealed the presence of considerable variation in studied traits, except fruit length and width and fruit dry weight. Foliar spray of DAP + boron followed by N:P:K (20:20:20) + boron yield gave highest yield (114.7 and 107.8 q/ha), net income per hectare (Rs.90,556.00 and Rs.82,370.00) and highest input-output ratio (2.92 and 2.75) respectively. Thus, a foliar spray of Diammonium Phosphate (1.5%) or N:P:K (20:20:20) (0.5%) at 35 DAS and two spray of Boric acid (1%) at 35 and 45 DAS may be suggested to the local cucumber grower for higher production and profit.

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7. Genetic Variability Studies of Gerbera Cultivars under Polyhouse Conditions

Babita Singh^{1*}, Rohit Pinder¹, Ranjan Srivastava² and Vishal Pal¹

¹Division of Floriculture & Landscaping, Indian Agricultural Research Institute, New Delhi-110 012

²Department of Horticulture, College of Agriculture, G.B.Pant University of Agriculture and Technology, Pantnagar, Uttarakhand, 263 145

*Corresponding Author's E-mail: bflori17feb@gmail.com

ABSTRACT : *Gerbera jamesonii* L. is a perennial herb with deeply lobed leaves covered with silky hairs arising from a crown. It is one of the most popular ornamental flowers in the world, both as a cut flower and as a pot plant. Emergence of era of Hi- tech cultivation is becoming a boon to enhance the quality production. Considering the importance of this cut flower, attempts have been made to evaluate 8 varieties of gerbera (Ruby Red, Sangria, Dalma, Dune, Essance, Kozak, Alsmeeera and Gold Spic) under low cost polyhouse conditions for various growth and flowering characters. The experiment was conducted at Model Floriculture Center of Govind Ballabh Pant University of Agriculture and Technology, Pantnagar, Uttarakhand. The results revealed that polyhouse conditions had significant influence on all the growth and flowering parameters of gerbera varieties. The results showed that cv. Dune recorded maximum number of leaves (26.97), plant height (30.88 cm), flower stalk length (58.18 cm), flower diameter (9.44 cm) and number of flowers/plant/year (27) whereas, flower stalk diameter (1.01 cm), duration of flowers (18 days) and vase life (10 days) were recorded in the variety Essance which was significantly at par with Dune. Among all the varieties used, *Gerbera jamesonii* cv. Dune showed superior results.

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8. Influence of Seedling Age on Yield Attributes and Yield of Tomato (*Lycopersicon esculentum* Mill.)

J. P. Singh*, A.K. Dwivedi and Ambesh Kumar Jaiswal

Department of Horticulture C. S. Azad University of Agriculture & Technology Kanpur-208 002, U.P.

*Corresponding Author's Email: ab05aug@gmail.com

ABSTRACT : The experiment was conducted at the Department of Horticulture, C. S. A. Univ. of Agri. & Tech., Kanpur during the year 2014-15 to find out "Influence of seedling age on yield attributes and yield of tomato (*Lycopersicon esculentum* Mill.)." Randomized block design (RBD) was used with eight treatments of seedling age i.e. T₁ (16 days), T₂ (20 days), T₃ (24 days), T₄ (28 days), T₅ (32 days), T₆ (36 days), T₇ (40 days) and T₈ (40 days) and three replications. Observations were recorded on yield attributes and yield i.e. number of fruit/plant, diameter of fruit, weight of fruit, days required for fruit ripening after transplanting, fruit weight/plant (g) and yield (q)/ha. The results showed that treatment T₃ (24 days old transplant) increased significantly to number of

fruit/plant, weight of fruit and fruit yield/ha revealing 31.72 fruits, 41.55g per fruit and 308.63 q/ha. Whereas, T₃ treatment revealed maximum 725 g yield/plant which is superior than all the treatments. Maximum 4.41 cm diameter obtained by T₄ (28 days old transplant) significantly higher to all treatments. T₁ (16 days old transplant) required maximum 71.65 days for fruit ripening which was significantly superior to all the treatments. The minimum 52.84 days required for fruit ripening by T₈ (44 days old transplant) treatment.

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9. Performance of Single Petalled Tuberose (*Polianthes tuberosa* L.) Genotypes under Pune Condition

Krishan P. Singh^{1*}, Tarak N. Saha and P. Holajjer

ICAR–Directorate of Floricultural Research College of Agriculture Campus, Shivajinagar, Pune-411 005 (Maharashtra)

¹Present address: Division of Floriculture and Landscaping, ICAR –Indian Agricultural Research Institute, New Delhi- 110 012.

*Corresponding Author's E.mail: kpsingh.dfr@gmail.com

ABSTRACT : Tuberose (*Polianthes tuberosa*) is one of the popular flower crop cultivated for loose flower and cut flower in India and also holds a great potential for export. Therefore, an experiment was conducted at the research farm of ICAR-Directorate of Floricultural Research, Shivajinagar, Pune to evaluate performance of seven genotypes of tuberose viz., Mexican Single, Sikkim Selection, Arka Shringar, Phule Rajani, Hyderabad Single, Arka Prajwal and Arka Nirantara for their performance under Pune condition. The study revealed that significant variation was recorded on vegetative growth and floral parameters among the evaluated genotypes. Cultivar Arka Prajwal produced significantly taller plants (62.27 cm) followed by Arka Nirantara (60.27 cm). Cultivar Phule Rajani (23.86) recorded highest number of bulbs produced per clump followed by Hyderabad Single (18.00) and Mexican Single (11.60). Genotype Sikkim Selection produced tallest spike (108.43 cm) followed by cv. Arka Prajwal (104.41 cm). Cultivar Arka Prajwal produced significantly higher rachis length (34.70 cm), fresh weight of cut spike (121.67 g), diameter of open florets (4.36 cm) and weight of 20 open (37.00 g) and mature (27.33 g) floret compared to other genotypes. Cultivar Arka Nirantara produced maximum number of florets per spike (57.60) followed by cv. Arka Prajwal (53.33).

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10. Effect of Various Agronomic Practices on Potato Crop in Agra region of Uttar Pradesh

Dindayal Gupta¹, O. P. Rajput¹ and V. K. Dhangra^{2*}

¹Department of Agronomy, Raja Balwant Singh College, Bichpuri, Agra, Uttar Pradesh

²Department of Agricultural Sciences & Engineering, School of Engineering and Technology, IFTM University, Moradabad, Uttar Pradesh

*Corresponding Author's Email: vinod.dhangra@gmail.com

ABSTRACT : A field experiment was conducted during the *rabi* seasons of 2005-06 and 2006-07 at R.B.S. College Agricultural Research Farm, Bichpuri, Agra in sandy loam soil to study the effect of organic manure on growth, yield and economics of potato. The eight treatments were applied {T₁-50% recommended NPK fertilizer + 50% N-FYM, T₂-1/3 N-FYM+1/3 N-Vermicompost+1/3 N Neem Cake, T₃-T₂ + intercropping (Radish), T₄-T₂ + Agronomic practices for weed control (khurpi weeding and pest control), T₅-50% N-FYM + Biofertilizer for N-Azotobactor, T₆-T₂+Biofertilizer for N-culture Azotobactor + for P-PSB, T₇- 100% NPK-fertilizer+secondary (Sulphur) and micro-nutrients (Zn)-soil test basis and T₈- Dummy plot}. The results on pooled basis of two years revealed that the maximum shoots m⁻¹ row length and plant height (cm) were obtained with T₄ (T₂ + Agronomic practices for weed control) followed by T₁. Significantly higher values of yield attributes viz. tuber plant⁻¹, size of tuber, weight of tuber plant⁻¹ and potato tuber yield were obtained with T₄. The next best treatment in these regard was T₁ and superiority of this treatment was noted over T₅, T₆, T₇ and T₈. Maximum tuber yield (236.54 q/ha) was recorded with the treatment of T₄ at par with T₁. The tubers under this treatment had highest protein content (9.92). On the basis of economics of crop cultivation, treatment T₄ and T₁ were found more cost-effective than other treatments.

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11. Correlation Studies in Turmeric (*Curcuma longa* L.) under Hill Zone of Karnataka

Veena Hanchinamani^{1*}, G. Raviraja Shetty², Arif A. Agasimani³ and Vishnuvardhana⁴

¹Department of Horticulture, Khanapur - 591 302 Dist: Belagavi, Karnataka, India.

²Department of PSMAC, College of Horticulture, Mudigere – 577 132, Dist: Chickamagalur, Karnataka, India.

³K.R.C. College of Horticulture, Arabhavi – 591 218, Gokak, Dist: Belagavi, Karnataka, India.

⁴Horticulture Research Station, Somanath Halli, Hassan – 573 201, Karnataka, India.

*Corresponding Author's E-mail : veenahanchinamani@gmail.com.

ABSTRACT : Correlation and path analysis studies were carried out on 14 growth and yield traits in 19 cultivars of Turmeric (*Curcuma longa* L.) during the year of 2011-12 at college of Horticulture, Mudigere. There was the highest significant positive association of fresh rhizome yield per plant with plant height, number of tillers per plant, number of leaves per plant, number of mother rhizome, number of primary fingers, number of secondary fingers, weight of mother rhizome (g), weight of primary fingers (g), weight of secondary fingers (g), length of primary fingers (cm) and length of secondary fingers (cm) at both genotypic and phenotypic level. There was significant and negative association of fresh rhizome yield per plant with petiole length (cm) and leaf area index (dm²).

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12. Optimization of Seed Germination in Makhana (*Euryale ferox* Salisb.) under Controlled Conditions

Ramesh Kumar¹, Javed Ahmad¹, M. Z. Abdin¹, Vidyanath Jha^{3*}, Amit Kumar¹ and I. S. Singh⁴

¹Dept. of Biotechnology, L. N. Mithila University, Darbhanga, Bihar, 846008, India.

²Dept. of Biotechnology, Jamia Hamdard University, New Delhi-62, India.

³Dept. of Botany, M.R.M. College, L.N Mithila University, Darbhanga, Bihar, 846008, India.

⁴ICAR-RCER Research Center for Makhana, Darbhanga, Bihar, 846005, India.

*Corresponding author's E-mail: vidyanathjha@gmail.com

ABSTRACT : Germination in *Euryale ferox* seeds was studied under controlled condition with reference to (1) Temperature (4°C and 25°C), (2) Germination period (0,5,10,15,20,25 days at 4°C), (3) Light and dark condition, and (4) Seed size (two groups from 0.5 cm to 1 cm and from 1 cm to less than 1.5 cm). Results indicated that seeds were dormant at the time of shedding. The stratification at 40°C promoted germination more effectively than at 25 ± 2°C. After stratification at 4°C, the germination frequency of the larger seeds peaked at 30-35 days stratification. Different germination responses between smaller and larger seeds could be due to a difference in the rate of induction of dormancy in the annual dormancy cycle. Seeds germinated in both light and darkness, which demonstrated that light was not involved in the regulation of *E.ferox* seed germination. The optimal temperature for germination was 25 ± 2°C. Thus, it could be inferred that an interaction between light condition and temperature facilitates higher germination frequency at 25 to 30°C.

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13. Effect of Packaging Materials and Shelf Life Environment on Storage Behaviour and Quality of Ber (*Ziziphus mauritiana* Lamk.) CV. Gola and Chuhara

V. K. Asati^{1*}, K. P Singh¹ and A. K. Goswami²

¹Department of Horticulture, A. S. (P.G.) College, Lakhaoti, C.C.S. University Meerut (U.P.) India

²Division of FHT, IARI, New Delhi

*Corresponding Author's E-mail: drvinodasati@gmail.com

ABSTRACT : Experiment was conducted to study the effect of different packaging materials like Basket, Perforated polythene bag, Wooden box, Gunny bag and Card board box on the storage behaviour and quality of ber at ambient temperature (Temp. 20.5°C and RH 25%) under North Indian conditions. Fruit colour was changed with increasing storage period in various containers. Increase in physiological loss in weight (PLW), spoilage percentage, total soluble solids (TSS), and decrease in organoleptic quality, acidity and ascorbic acid were general phenomena with advancement of storage period in all the treatments. The minimum per cent loss in weight and spoilage percentage was found in card board box followed by wooden box. Organoleptic rating was highest in gunny bags followed by perforated polythene. The maximum TSS was found in wooden box stored fruits followed by card board baskets. The maximum loss in per cent acidity and ascorbic acid content was observed in wooden box, whereas minimum loss was found in gunny bags. However, maximum ascorbic

acid retention was found in gunny bag followed by perforated polythene bag. It may be concluded that perforated polythene bag and gunny bag were most suitable and economically viable packing container for storage of ber fruits under ambient conditions.

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14. Effect of NPK, Biofertilizers and Plant Spacing on Economics of African Marigold (*Tagetes erecta* L.)

Manoj Kumar Rolaniya^{1*}, S. K. Khandelwal¹, Sunita Koodi¹, Priynka Kumari Jat¹
and A. Choudhary²

¹Department of Horticulture, S. K. N. Agriculture University, Jobner, Jaipur (Rajasthan) 303329

²Agriculture University, Kota (Rajasthan)

* Corresponding Author's Email : manojetawa91@gmail.com

ABSTRACT : A field experiment was conducted during winter season of 2014-15 to study the effect of NPK, biofertilizers and plant spacings on growth and yield of African marigold (*Tagetes erecta* L.). The economics of maximum B: C ratio (6.00) was recorded with combined application of 100 % RDF of NPK + *Azotobacter* + PSB + 60 x 45 spacing cm and maximum net returns (₹ 283267 ha⁻¹) was recorded with same combination of treatments. This treatment was significantly superior over other treatment combinations except 100% RDF of NPK + 60 x 45 cm (₹ 262726 ha⁻¹) which was found at par.

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15. Medicinal Properties of Garlic (*Allium sativum* L): A Review

S. Dixit* and A. K. Dubey

Department of Vegetable Science, C.S. Azad University of Agriculture & Technology, Kalyanpur, Kanpur-208 024

*Corresponding author's E-mail: sdixit307@gmail.com

ABSTRACT: Among the spices grown in India, garlic (*Allium sativum* L.) is undoubtedly one of the important crops of the Alliaceae after onion and propagated vegetatively. It is also used as flavour agent and in pharmaceutical preparation due to its high valid medicinal properties like antimicrobial, antidiabetic and anticarcinogenic action. Garlic is one of the oldest herbal remedies; it was a favoured food in Old Testament and has been accorded almost magical properties in various cultures. Garlic has been employed to treat infections, wounds, respiratory conditions, diarrhea, rheumatism, heart disease, diabetes and many other disorders. Currently, it is most often used as an antithrombotic and antioxidant herb to help prevent heart disease, atherosclerosis and cancer.

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E-mail : hortfloraspectrum.india@gmail.com, editorhortflora.vku@gmail.com; Mob. : +91 - 9412833903

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